[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Part 431

[EERE-2017-BT-STD-0016]

Energy Conservation Program: Energy Conservation Standards for Metal Halide Lamp Fixtures

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Request for information.

SUMMARY: The U.S. Department of Energy ("DOE") is attempting to determine whether to amend the current energy conservation standards for metal halide lamp fixtures. Under the Energy Policy and Conservation Act, as amended, DOE must review these standards at least once every six years and publish either a proposal to amend these standards or a notice of determination that the existing standards do not need amending. DOE is soliciting the public for information to help determine whether the current standards require amending under the applicable statutory criteria. DOE welcomes written comments from the public on any subject within the scope of this document, including topics not specifically raised.

DATES: Written comments and information are requested and will be accepted on or before **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL***

REGISTER].

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *http://www.regulations.gov*. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE-2017-BT-STD-0016, by any of the following methods:

1. *Federal eRulemaking Portal*: *http://www.regulations.gov*. Follow the instructions for submitting comments.
2. *E-mail*: *MHLF2017STD0016@ee.doe.gov*. Include the docket number EERE-2017-BT-STD-0016 in the subject line of the message.
3. *Postal Mail*: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-1445. If possible, please submit all items on a compact disc (CD), in which case it is not necessary to include printed copies.
4. *Hand Delivery/Courier*: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L'Enfant Plaza, SW., 6th Floor, Washington, DC, 20024. Telephone: (202) 287-1445. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

No telefacsimilies (faxes) will be accepted. For detailed instructions on submitting comments and additional information on the rulemaking process, see section III of this document.

Docket: The docket for this activity, which includes *Federal Register* notices, comments, and other supporting documents/materials, is available for review at *http://www.regulations.gov*. All documents in the docket are listed in the *http://www.regulations.gov* index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket web page can be found at *http://www.regulations.gov*. The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section III for information on how to submit comments through *http://www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT:

Ms. Lucy deButts, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-1604. E-mail: *ApplianceStandardsQuestions@ee.doe.gov*.

Mr. Michael Kido, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-8145. E-mail: *Michael.Kido@hq.doe.gov*.

For further information on how to submit a comment, review other public comments and the docket, or participate in the public meeting, contact the Appliance and Equipment Standards

Program staff at (202) 287-1445 or by e-mail: *ApplianceStandardsQuestions@ee.doe.gov*.

SUPPLEMENTARY INFORMATION:

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I. Introduction

A. Authority and Background

The Energy Policy and Conservation Act of 1975, as amended ("EPCA"),[1] among other things, authorizes DOE to regulate the energy efficiency of a number of consumer products and industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B[2] of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles. These products include metal halide lamp fixtures ("MHLFs"), the subject of this request for information ("RFI").[3] (42 U.S.C. 6292(a)(19)) EPCA prescribed energy conservation standards ("ECS") for these products. (42 U.S.C. 6295(hh)(1)), and directed DOE to conduct two cycles of rulemakings to determine whether to amend these standards. (42 U.S.C. 6295(hh)(2)-(3))

Under EPCA, DOE's energy conservation program consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA specifically include definitions (42 U.S.C. 6291), test procedures (42 U.S.C. 6293), labeling provisions (42 U.S.C. 6294), energy conservation standards (42 U.S.C. 6295), and the authority to require information and reports from manufacturers (42 U.S.C. 6296).

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[1] All references to EPCA in this document refer to the statute as amended through America's Water Infrastructure Act of 2018, Public Law 115–270 (October 23, 2018).

[2] For editorial reasons, upon codification in the U.S. Code, Part B was redesignated as Part A.

[3] Although MHLFs (which are industrial lighting equipment) are treated as covered products under EPCA, as a matter of administrative convenience and to minimize confusion among interested parties, DOE adopted its MHLF provisions into subpart S of 10 CFR part 431 (the portion of DOE's regulations dealing with commercial and industrial equipment) because businesses, rather than individuals, purchase them. 74 FR 12058, 12062 (March 23, 2009). For the purpose of this notice, DOE refers to MHLFs generally as "equipment." When the notice refers to specific provisions in Part A of EPCA, the term "product" is used.

Federal energy efficiency requirements for covered products established under EPCA generally supersede State laws and regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297(a)-(c)) DOE may, however, grant waivers of Federal preemption in limited instances for particular State laws or regulations, in accordance with the procedures and other provisions set forth under 42 U.S.C. 6297(d).

DOE completed the first of these rulemaking cycles in 2014 by adopting amended performance standards for MHLFs manufactured on or after February 10, 2017 ("2014 MHLF ECS final rule"). 79 FR 7746 (February 10, 2014). The current energy conservation standards are located in title 10 of the Code of Federal Regulations ("CFR") part 431. See 10 CFR 431.326 (detailing the applicable energy conservation standards for different classes of MHLFs). The currently applicable DOE test procedures for MHLFs appear at 10 CFR 431.324. Under 42 U.S.C. 6295(hh)(3)(A), the agency must conduct a second review of its energy conservation standards for MHLFs and publish a final rule to determine whether to amend those standards. This document initiates that second review.

B. Rulemaking Process

DOE must follow specific statutory criteria for prescribing new or amended standards for covered products. EPCA requires that any new or amended energy conservation standard be designed to achieve the maximum improvement in energy or water efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) To determine whether a standard is economically justified, EPCA requires that DOE determine whether the benefits of the standard exceed its burdens by considering, to the greatest extent practicable, the following seven factors:

(1) The economic impact of the standard on the manufacturers and consumers of the affected products;

(2) The savings in operating costs throughout the estimated average life of the product compared to any increases in the initial cost, or maintenance expenses;

(3) The total projected amount of energy and water (if applicable) savings likely to result directly from the standard;

(4) Any lessening of the utility or the performance of the products likely to result from the standard;

(5) The impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the standard;

(6) The need for national energy and water conservation; and

(7) Other factors the Secretary of Energy (Secretary) considers relevant.

(42 U.S.C. 6295(o)(2)(B)(i)(I)–(VII))

DOE fulfills these and other applicable requirements by conducting a series of analyses throughout the rulemaking process. Table I.1 shows the individual analyses that are performed to satisfy each of the requirements within EPCA.

Table I.1 EPCA Requirements and Corresponding DOE Analysis

EPCA Requirement	Corresponding DOE Analysis
Technological Feasibility	• Market and Technology Assessment • Screening Analysis • Engineering Analysis
Economic Justification:	
1. Economic impact on manufacturers and consumers	• Manufacturer Impact Analysis • Life-Cycle Cost and Payback Period Analysis • Life-Cycle Cost Subgroup Analysis • Shipments Analysis
2. Lifetime operating cost savings compared to increased cost for the product	• Markups for Product Price Determination • Energy and Water Use Determination • Life-Cycle Cost and Payback Period Analysis
3. Total projected energy savings	• Shipments Analysis • National Impact Analysis
4. Impact on utility or performance	• Screening Analysis • Engineering Analysis
5. Impact of any lessening of competition	• Manufacturer Impact Analysis
6. Need for national energy and water conservation	• Shipments Analysis • National Impact Analysis
7. Other factors the Secretary considers relevant	• Employment Impact Analysis • Utility Impact Analysis • Emissions Analysis • Monetization of Emission Reductions Benefits • Regulatory Impact Analysis

As detailed throughout this RFI, DOE is publishing this document seeking input and data from interested parties to aid in the development of the technical analyses on which DOE will ultimately rely to determine whether (and if so, how) to amend the standards for MHLFs.

II. Request for Information and Comments

In the following sections, DOE has identified a variety of issues on which it seeks input to aid in the development of the technical and economic analyses regarding whether to amend its standards for MHLFs. Additionally, DOE welcomes comments on other issues relevant to the conduct of this rulemaking that may not specifically be identified in this document. In particular, DOE notes that under Executive Order 13771, executive branch agencies such as DOE are directed to manage the costs associated with the imposition of expenditures required to comply with Federal regulations. See 82 FR 9339 (February 3, 2017) Consistent with that Executive Order, DOE encourages the public to provide input on measures DOE could take to lower the cost of its energy conservation standards rulemakings, recordkeeping and reporting requirements, and compliance and certification requirements applicable to MHLFs while remaining consistent with the requirements of EPCA.

Issue II.1: DOE seeks comment on whether there have been sufficient technological or market changes since the most recent standards update that may justify a new rulemaking to consider more stringent standards. Specifically, DOE seeks data and information that could enable the agency to determine whether DOE should propose a "no new standard" determination because a more stringent standard: 1. would not result in a significant savings of energy; 2. is not technologically feasible; 3. is not economically justified; or 4. any combination of the foregoing.

Issue II.2: DOE recently published an RFI on the emerging smart technology appliance and equipment market. 83 FR 46886 (September 17, 2018). In that RFI, DOE sought information to better understand market trends and issues in the emerging market for appliances and commercial equipment that incorporate smart technology. DOE's intent in issuing the RFI

was to ensure that DOE did not inadvertently impede such innovation in fulfilling its statutory obligations in setting efficiency standards for covered products and equipment. DOE seeks comments, data and information on the issues presented in the RFI as they may be applicable to MHLFs.

A. Equipment Covered by This Rulemaking

This RFI addresses equipment meeting the MHLF definition, as codified in 10 CFR 431.322. An MHLF is defined as a light fixture for general lighting application designed to be operated with a metal halide lamp and a ballast for a metal halide lamp. 42 U.S.C. 6291(64); 10 CFR 431.322. DOE has also defined several terms related to MHLF in 10 CFR 431.322.

The Energy Independence and Security Act of 2007, Pub. L. 110-140 (December 19, 2007) ("EISA 2007"), established energy conservation standards for MHLFs with ballasts designed to operate lamps with rated wattages between 150 watts ("W") and 500 W and excluded three types of fixtures within the covered wattage range from energy conservation standards: (1) MHLFs with regulated-lag ballasts; (2) MHLFs that use electronic ballasts and operate at 480 volts; and (3) MHLFs that are rated only for 150 watt lamps, are rated for use in wet locations as specified by the National Fire Protection Association ("NFPA") in NFPA 70, "National Electrical Code 2002 Edition,"[4] and contain a ballast that is rated to operate at ambient air temperatures above 50 °C as specified by Underwriters Laboratory ("UL") in UL 1029,

[4] DOE notes that although the exclusion in 42 U.S.C. 6295(hh)(1)(B)(iii)(II) identifies those fixtures that are rated for use in wet locations as specified by the National Electrical Code 2002 section 410.4(A), the National Fire Protection Agency ("NFPA") is responsible for authoring the National Electrical Code, which is identified as NFPA 70. Accordingly, DOE's use of NFPA 70 under the MHLF-related provision in 10 CFR 431.326(b)(3)(iii) is identical to the statutory exclusion set out by Congress.

"Standard for Safety High-Intensity-Discharge Lamp Ballasts." (42 U.S.C. 6295(hh)(1)) In the 2014 MHLF ECS final rule, DOE also promulgated standards for the group of MHLFs with ballasts designed to operate lamps rated 50 W–150 W and 501 W–1,000 W. DOE also promulgated standards for one type of previously excluded fixture: a 150 W MHLF rated for use in wet locations[4] and containing a ballast that is rated to operate at ambient air temperatures greater than 50 °C – i.e. those fixtures that fall under 42 U.S.C. 6295(hh)(1)(B)(iii). DOE continued to exclude from standards MHLFs with regulated-lag ballasts and 480 V electronic ballasts. In addition, due to a lack of applicable test method for high-frequency electronic ("HFE") ballasts, in the 2014 MHLF ECS final rule, DOE did not establish standards for MHLFs with HFE ballasts. 79 FR 7754-7756 (February 10, 2014).

Although current standards for MHLFs require them to contain a ballast that meets or exceeds a minimum ballast efficiency, the entity responsible for certifying compliance with the applicable standard is the MHLF manufacturer or importer. The MHLF manufacturer may opt to use a third-party to certify on its behalf, such as the ballast manufacturer. However, the MHLF manufacturer or importer is ultimately responsible for certifying compliance to DOE. See generally 42 U.S.C. 6291(10)-(12) and 10 CFR 429.12.

Issue A.1 DOE seeks input on whether definitions related to MHLFs in 10 CFR 431.322 require any revisions – and if so, how those definitions should be revised. DOE also seeks input on whether additional definitions are necessary for DOE to clarify or otherwise implement its regulatory requirements related to MHLFs.

B. Market and Technology Assessment

The market and technology assessment that DOE routinely conducts when analyzing the impacts of a potential new or amended energy conservation standard provides information about the MHLF industry that will be used in DOE's analysis throughout the rulemaking process. DOE uses qualitative and quantitative information to characterize the structure of the industry and market. DOE identifies manufacturers, estimates market shares and trends, addresses regulatory and non-regulatory initiatives intended to improve energy efficiency or reduce energy consumption, and explores the potential for efficiency improvements in the design and manufacturing of MHLFs. DOE also reviews product literature, industry publications, and company websites. Additionally, DOE considers conducting interviews with manufacturers to improve its assessment of the market and available technologies for MHLFs.

1. Product/Equipment Classes

When evaluating and establishing energy conservation standards, DOE may divide covered products into product classes by the type of energy used, or by capacity or other performance-related features that justify a different standard. (42 U.S.C. 6295(q)) In making a determination whether capacity or another performance-related feature justifies a different standard, DOE must consider such factors as the utility of the feature to the consumer and other factors DOE deems appropriate. *Id*.

For MHLFs, the current energy conservation standards specified in 10 CFR 431.326 are based on 24 equipment classes that were analyzed in the 2014 MHLF ECS final rule according to the following performance-related features that provide utility to the customer: input voltage,

rated lamp wattage, and designation for indoor versus outdoor applications. Table II.1 lists the 24 MHLF equipment classes from the 2014 MHLF ECS final rule.

Table II.1 MHLF Equipment Classes from the 2014 MHLF ECS Final Rule

Designed to be Operated with Lamps of the Following Rated Lamp Wattage	Indoor/Outdoor	Input Voltage Type
≥50W and ≤100W	Indoor	Tested at 480 V
≥50W and ≤100W	Indoor	All others
≥50W and ≤100W	Outdoor	Tested at 480 V
≥50W and ≤100W	Outdoor	All others
>100W and <150W*	Indoor	Tested at 480 V
>100W and <150W*	Indoor	All others
>100W and <150W*	Outdoor	Tested at 480 V
>100W and <150W*	Outdoor	All others
≥150W** and ≤250W	Indoor	Tested at 480 V
≥150W** and ≤250W	Indoor	All others
≥150W** and ≤250W	Outdoor	Tested at 480 V
≥150W** and ≤250W	Outdoor	All others
>250W and ≤500W	Indoor	Tested at 480 V
>250W and ≤500W	Indoor	All others
>250W and ≤500W	Outdoor	Tested at 480 V
>250W and ≤500W	Outdoor	All others
>500W and ≤1,000W	Indoor	Tested at 480 V
>500W and ≤1,000W	Indoor	All others
>500W and ≤1,000W	Outdoor	Tested at 480 V
>500W and ≤1,000W	Outdoor	All others
>1,000W and ≤2,000W	Indoor	Tested at 480 V
>1,000W and ≤2,000W	Indoor	All others
>1,000W and ≤2,000W	Outdoor	Tested at 480 V
>1,000W and ≤2,000W	Outdoor	All others

* Includes 150W MHLFs exempted by EISA 2007, which are MHLFs rated only for 150W lamps; rated for use in wet locations, as specified by the NFPA 70-2002, section 410.4(A); and containing a ballast that is rated to operate at ambient air temperatures above 50 °C, as specified by UL 1029–2007.
** Excludes 150W MHLFs exempted by EISA 2007, which are MHLFs rated only for 150W lamps; rated for use in wet locations, as specified by the NFPA 70-2002, section 410.4(A); and containing a ballast that is rated to operate at ambient air temperatures above 50 °C, as specified by UL 1029–2007.

DOE notes that since Table II.1 represents all equipment classes in the 2014 MHLF ECS final rule, it also includes a number of individual classes for which standards were not set. For example, DOE did not adopt standards in the 2014 MHLF ECS final rule for MHLFs designed to

be operated with lamps rated greater than 1,000 W and less than or equal to 2,000 W but they are included as one of the many different MHLF equipment classes that DOE is currently considering within the context of this RFI. Consequently, the table of standards presented in Table I.1 in the 2014 MHLF ECS final rule does not include MHLFs that operate those lamps. 79 FR 7747-7748 (February 10, 2014). See also id. at 79 FR 7832-7836 (detailing DOE's reasoning under the "Conclusions" of the preamble discussion). Furthermore, because DOE adopted the same standards for indoor and outdoor equipment classes that are tested at the same input voltage and that operate lamps of the same wattage, DOE omitted the indoor/outdoor distinction when codifying the table of standards into 10 CFR 431.326(c). DOE previously analyzed indoor and outdoor fixtures separately as part of its prior rulemaking because these two types of fixtures offer different performance-related features. When electronic ballasts are used in outdoor applications, they require additional transient protection because of the potential for voltage surges in outdoor locations. Indoor fixtures with electronic ballasts also have an added feature to provide 120 V auxiliary power functionality for use in the event of a power outage. Based on these different features, DOE established separate equipment classes for indoor and outdoor fixtures, 79 FR 7763–7764 (February 10, 2014), but adopted the same minimum energy conservation standards for these classes. (See section II.D for more information).

Issue B.1 DOE requests feedback on the 24 MHLF equipment classes from the 2014 MHLF ECS final rule and whether changes to these individual equipment classes and their descriptions should be made or whether certain classes should be merged or separated (*e.g.*, indoor and outdoor, wattage ranges). DOE further requests feedback on whether combining certain classes could impact utility by eliminating any performance-related features or impact the stringency of the current energy conservation standard for this equipment. Specifically, DOE

requests comment on whether the features associated with indoor and/or outdoor fixtures (*e.g.*, thermal management, transient protection, auxiliary power functionality) remain in the market today.

DOE is also aware that new configurations and features could be available for MHLFs that may not have been available at the time of the last energy conservation standards analysis. Based on DOE's review of the market, DOE found metal halide dimming ballasts available from multiple manufacturers that could be used in MHLFs. DOE has identified both step-level dimming and continuous dimming metal halide systems that are dimmable down to 50 percent of rated power.

Issue B.2 DOE seeks information regarding any new equipment classes it should consider for inclusion in its analysis. Specifically, DOE requests information on any performance-related features (*e.g.*, dimmability, *etc*.) that may provide unique customer utility and data detailing the corresponding impacts on energy use that would justify separate equipment classes (*i.e.*, explanation for why the presence of these performance-related features would increase energy consumption).

In describing which MHLFs are included in each equipment class, DOE incorporates by reference the 2002 version of NFPA 70 and the 2007 version of UL 1029 in DOE's regulations. NFPA 70 is a national safety standard for electrical design, installation, and inspection, and is also known as the 2002 National Electrical Code. UL 1029 is a safety standard specific to high intensity discharge ("HID") lamp ballasts; a metal halide lamp ballast is a type of HID lamp ballast. Both NFPA 70 and UL 1029 are used to describe the applicable equipment class for

MHLFs that EISA 2007 excluded from the statutory standards enacted by Congress but that were later included as part of the 2014 MHLF ECS final rule (see section II.A). DOE has found that a 2017 version of NFPA 70 (NFPA 70-2017) "NFPA 70 National Electrical Code 2017 Edition"[5] and a 2014 version of UL 1029 (UL 1029-2014) "Standard for Safety High-Intensity-Discharge Lamp Ballasts"[6] are now available.

Issue B.3: DOE requests comment on whether incorporating by reference the updated industry standards NFPA 70-2017 and UL 1029-2014 will impact the MHLFs included in each equipment class in DOE's regulations.

2. Technology Assessment

In analyzing the feasibility of potential new or amended energy conservation standards, DOE uses information about existing and past technology options and prototype designs to help identify technologies that manufacturers could use to meet and/or exceed a given set of energy conservation standards under consideration. In consultation with interested parties, DOE intends to develop a list of technologies to consider in its analysis. That analysis will likely include a number of the technology options DOE previously considered during its most recent rulemaking for MHLFs. A complete list of those prior options appears in Table II.2 of this RFI.

[5] Approved August 24, 2016.
[6] Approved December 6, 2013.

Table II.2 Previously Considered Technology Options from the 2014 MHLF ECS Final Rule

Ballast Type	Design Option		Description
Magnetic	Improved Core Steel		Use a higher grade of electrical steel, including grain-oriented silicon steel, to lower core losses.
	Copper Wiring		Use copper wiring in place of aluminum wiring to lower resistive losses.
	Increased Stack Height		Add steel laminations to lower core losses.
	Increased Conductor Cross Section		Increase conductor cross section to lower winding losses.
	Electronic Ballast		Replace magnetic ballasts with electronic ballasts.
	Amorphous Steel		Create the core of the inductor from laminated sheets of amorphous steel insulated from each other.
Electronic	Improved Components	Magnetics	Use grain-oriented or amorphous electrical steel to reduce core losses.
			Use optimized-gauge copper or litz wire to reduce winding losses.
			Add steel laminations to lower core losses.
			Increase conductor cross section to lower winding losses.
		Diodes	Use diodes with lower losses.
		Capacitors	Use capacitors with a lower effective series resistance and output capacitance.
		Transistors	Use transistors with lower drain-to-source resistance.
	Improved Circuit Design	Integrated Circuits	Substitute discrete components with an integrated circuit.
	Amorphous Steel		Create the core of the inductor from laminated sheets of amorphous steel insulated from each other.

Issue B.4 DOE seeks information on the technologies listed in Table II.2 of this RFI regarding their applicability to the current market and how these technologies may impact the efficiency of MHLFs as measured according to the DOE test procedure. DOE also seeks information on how these technologies may have changed since they were considered in the 2014 MHLF ECS final rule analysis. Specifically, DOE seeks information on the range of

efficiencies or performance characteristics that are currently available for each technology option.

Issue B.5 DOE seeks comment on other technology options that it should consider for inclusion in its analysis and if these technologies may impact equipment features or customer utility.

C. Screening Analysis

The purpose of the screening analysis is to evaluate the technologies that improve equipment efficiency to determine which technologies will be eliminated from further consideration and which will be considered in the engineering analysis.

DOE determines whether to eliminate certain technology options from further consideration based on the following criteria:

(1) *Technological feasibility.* Technologies that are not incorporated in commercial products or in working prototypes will not be considered further.

(2) *Practicability to manufacture, install, and service.* If it is determined that mass production of a technology in commercial products and reliable installation and servicing of the technology could not be achieved on the scale necessary to serve the relevant market at the time of the effective date of the standard, then that technology will not be considered further.

(3) *Impacts on product utility or product availability*. If a technology is determined to have significant adverse impact on the utility of the product to significant subgroups of consumers, or result in the unavailability of any covered equipment type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as equipment generally available in the United States at the time, it will not be considered further.

(4) *Adverse impacts on health or safety.* If it is determined that a technology will have significant adverse impacts on health or safety, it will not be considered further.

10 CFR part 430, subpart C, appendix A, 4(a)(4) and 5(b).

Technology options identified in the technology assessment are evaluated against these criteria using DOE's analyses and inputs from interested parties (*e.g.*, manufacturers, trade organizations, and energy efficiency advocates). Technologies that pass through the screening analysis are referred to as "design options" in the engineering analysis. Technology options that fail to meet one or more of the four criteria are eliminated from consideration.

Table II.3 summarizes the screened-out technology option, and the applicable screening criteria, from the 2014 MHLF ECS final rule.

Table II.3 Screened-Out Technology Options from the 2014 MHLF ECS Final Rule

	EPCA Criteria (X = Basis for Screening Out)			
Screened Technology Option	**Technological Feasibility**	**Practicability to Manufacture, Install, and Service**	**Adverse Impact on Product Utility**	**Adverse Impacts on Health and Safety**
Amorphous Steel	X	X	X	

Issue C.1 DOE requests feedback on what impact, if any, the four screening criteria described in this section would have on each of the technology options listed in Table II.2 of this RFI with respect to MHLFs. Similarly, DOE seeks information regarding how these same criteria would affect any other technology options not already identified in this document with respect to their potential use in MHLFs.

Issue C.2 With respect to the screened-out technology option listed in Table II.3 of this RFI, DOE seeks information on whether this option would, based on current and projected assessments, remain screened out under the four screening criteria described in this section. With respect to this technology option, what steps, if any, could be (or have already been) taken to facilitate the introduction of the option as a means to improve the energy performance of MHLFs and the potential to impact customer utility of the MHLFs.

D. Engineering Analysis

The engineering analysis estimates the cost-efficiency relationship of equipment at different levels of increased energy efficiency (efficiency levels). This relationship serves as the basis for the cost-benefit calculations for customers, manufacturers, and the Nation. In

determining the cost-efficiency relationship, DOE estimates the increase in manufacturer production cost ("MPC") associated with increasing the efficiency of equipment above the baseline, up to the maximum technologically feasible ("max-tech") efficiency level for each equipment class.

DOE historically has used the following three methodologies to generate incremental manufacturing costs and establish efficiency levels ("ELs") for analysis: (1) the design-option approach, which provides the incremental costs of adding to a baseline model design options that will improve its efficiency; (2) the efficiency-level approach, which provides the relative costs of achieving increases in energy efficiency levels, without regard to the particular design options used to achieve such increases; and (3) the cost-assessment (or reverse engineering) approach, which provides "bottom-up" manufacturing cost assessments for achieving various levels of increased efficiency, based on detailed cost data for parts and material, labor, shipping/packaging, and investment for models that operate at particular efficiency levels.

1. Baselines

For each established equipment class, DOE selects a baseline model as a reference point against which any changes resulting from energy conservation standards can be measured. The baseline model in each equipment class represents the characteristics of common or typical equipment in that class. Typically, a baseline model is one that meets the current minimum energy conservation standard and provides basic customer utility.

Consistent with this analytical approach, DOE tentatively plans to consider the current minimum energy conservation standards (which were required for compliance starting on

February 10, 2017) to establish the baseline model for each equipment class. The current standards for each equipment class are based on ballast efficiency. The current standards for MHLFs are found in 10 CFR 431.326.

Issue D.1 DOE requests feedback on whether using the current energy conservation standards for MHLFs provide an appropriate baseline efficiency level for DOE to use in evaluating whether to amend the current energy conservation standards for any of the equipment classes regulated by DOE. DOE requests data and suggestions to select the baseline models in order to better evaluate amending energy conservation standards for this equipment. In particular, DOE requests comment on the most common wattages and features of MHLFs sold today.

Issue D.2 DOE requests feedback on the appropriate baseline models for any newly analyzed equipment classes for which standards are not currently in place or for the contemplated combined equipment classes, as discussed in II.B.1 of this document.

2. Efficiency Levels and Maximum Technologically Feasible Levels

For the 2014 MHLF ECS final rule, DOE did not analyze all 24 MHLF equipment classes. Rather, DOE focused on 12 equipment classes and then scaled the ELs from representative equipment classes to those equipment classes it did not analyze directly (see the end of this section for more detail on the scaling factor). DOE did not directly analyze the equipment classes containing only fixtures tested at 480 V because their low shipment volume (as indicated by manufacturer interviews) would not make them representative of the MHLF

market. See 79 FR 7767 (February 10, 2014) and chapter 5 of the final rule technical support document ("TSD") for that rulemaking.

In the 2014 MHLF ECS final rule, after identifying more efficient substitutes for each baseline model, DOE developed ELs. DOE developed ELs based on: (1) the design options associated with the equipment class studied, and (2) the max-tech level for that class. In the 2014 MHLF ECS final rule, EL1 represented a moderately higher-efficiency magnetic ballast, and EL2 represented the max-tech magnetic ballast. EL3 represented the least efficient commercially available electronic ballast, and EL4 represented the max-tech level for all ballasts incorporated into MHLFs. 79 FR 7776 (February 10, 2014). In the 2014 MHLF ECS final rule, DOE adopted the ELs representing the highest efficiency level available for magnetic ballasts that resulted in a positive NPV while also maintaining the same ELs for both indoor and outdoor fixtures.

As part of DOE's analysis, the maximum available efficiency level is the highest efficiency unit currently available on the market. The maximum available efficiencies for the 12 analyzed equipment classes from the 2014 MHLF ECS final rule are included in Table II.4 of this RFI.

Table II.4 Maximum Efficiency Levels from 2014 MHLF ECS Final Rule

Designed to be Operated with Lamps of the Following Rated Lamp Wattage	Indoor/Outdoor	Input Voltage Type	Maximum Efficiency Level	
≥50W and ≤100W	Indoor	All others	1/(1+0.360×P^(-0.297))	
≥50W and ≤100W	Outdoor	All others		
>100W and <150W*	Indoor	All others	1/(1+0.360×P^(-0.297))	
>100W and <150W*	Outdoor	All others		
≥150W** and ≤250W	Indoor	All others	1/(1+0.360×P^(-0.297))	
≥150W** and ≤250W	Outdoor	All others		
>250W and ≤500W	Indoor	All others	1/(1+0.360×P^(-0.297))	
>250W and ≤500W	Outdoor	All others		
>500W and ≤1,000W	Indoor	All others	>500 W and ≤750 W: 0.910	>750 W and ≤1000 W: 0.000104×P + 0.832
>500W and ≤1,000W	Outdoor	All others		
>1,000W and ≤2,000W	Indoor	All others	0.936	
>1,000W and ≤2,000W	Outdoor	All others		

* Includes 150W MHLFs exempted by EISA 2007, which are MHLFs rated only for 150W lamps; rated for use in wet locations, as specified by the NFPA 70-2002, section 410.4(A); and containing a ballast that is rated to operate at ambient air temperatures above 50 °C, as specified by UL 1029–2007.

** Excludes 150W MHLFs exempted by EISA 2007, which are MHLFs rated only for 150W lamps; rated for use in wet locations, as specified by the NFPA 70-2002, section 410.4(A); and containing a ballast that is rated to operate at ambient air temperatures above 50 °C, as specified by UL 1029–2007.

DOE defines a max-tech efficiency level to represent the theoretical maximum possible efficiency if all available design options are incorporated in the equipment. In many cases, the max-tech efficiency level is not commercially available because it is not economically feasible. In the 2014 MHLF ECS final rule, all max-tech levels analyzed were commercially available. 79 FR 7777 (February 10, 2014). Since the 2014 MHLF ECS final rule, DOE found metal halide ballasts that indicate ballast efficiency could be up to 0.8 percent more efficient in the 50 W to 500 W range, up to 3.3 percent more efficient in the 500 W to 1000 W range, and up to 1.3 percent more efficient in the 1000 W to 2000 W range than the values indicated in Table II.4 of this RFI.

Issue D.3 DOE requests shipment data that indicate the breakdown over the last five years (or longer) between MHLFs with electronic ballasts and those with magnetic ballasts.

Issue D.4 DOE seeks input on whether the increased maximum available efficiency levels (discussed in the previous paragraph) are appropriate and technologically feasible for potential consideration as possible energy conservation standards for the equipment at issue – and if not, why not. DOE also requests feedback on whether the maximum available efficiencies discussed in the previous paragraph are representative of those for the other MHLF equipment classes not directly analyzed in the 2014 MHLF ECS final rule. If the range of possible efficiencies is different for the other equipment classes not directly analyzed, what alternative approaches should DOE consider using for those equipment classes and why?

Issue D.5 DOE seeks feedback on what design options would be incorporated at a max-tech efficiency level, and the efficiencies associated with those levels. As part of this request, DOE also seeks information as to whether there are limitations on the use of certain combinations of design options that would be necessary to achieve the max-tech efficiency level.

After developing ELs, DOE then scales the ELs from representative equipment classes to those equipment classes it does not analyze directly. In the 2014 MHLF ECS final rule, DOE developed a scaling factor by comparing quad-voltage ballasts over all representative wattages to their 480 V ballast counterparts using catalog data. DOE found that the difference in efficiency between ballasts tested at 480 V and ballasts tested at other input voltages varied based on the wattage of the ballast. DOE concluded a scaling factor of 2.0 percent (in the form of a subtraction of 2 percent from the representative equipment class ELs) to be appropriate from 50

W–150 W, a scaling factor of 1.0 percent to be appropriate from 150 W to 1000 W, and a scaling factor of 0.0 percent (i.e. no reduction) to be appropriate from 1001 W to 2000 W. 79 FR 7780-7781 (February 10, 2014).

Issue D.6 DOE requests feedback on how the performance of ballasts that are tested at 480 V compares to ballasts of the same wattage and indoor/outdoor classification that are in other equipment classes.

3. Manufacturer Production Costs and Manufacturing Selling Price

As described at the beginning of this section, the main outputs of the engineering analysis are cost-efficiency relationships that describe the estimated increases in manufacturer production cost associated with higher-efficiency equipment for the analyzed equipment classes. For the 2014 MHLF ECS final rule, DOE determined the MPC either through a teardown or retail pricing analysis. DOE generated ballast and empty fixture (i.e. physical enclosure and optics) MPCs separately and then combined the prices, as well as any relevant cost adders based on ballast and fixture type (*e.g.*, electronic or magnetic ballast, indoor or outdoor fixture), to create an overall MHLF MPC.

Issue D.7 DOE requests feedback on how manufacturers would incorporate the technology options listed in Table II.2 to increase energy efficiency in MHLFs beyond the baseline. This includes information on the sequencing manufacturers would follow when incorporating the different technologies to incrementally improve MHLF efficiency. DOE also requests feedback on whether increased energy efficiency would lead to other design changes that would not occur otherwise. DOE is interested in information regarding any potential impact

of design options on a manufacturer's ability to incorporate additional functions or attributes in response to customer demand. DOE is also interested in the extent to which (if at all) any design changes may adversely impact the ability of a given MHLF to operate with currently compatible applications.

Issue D.8 DOE seeks input on the increase in MPC associated with incorporating each particular design option (*e.g.*, improved core steel). Specifically, DOE is interested in whether and how the costs estimated for design options in the 2014 MHLF ECS final rule have changed since the time of that analysis (see chapter 5 of the 2014 MHLF ECS TSD). DOE also requests information on the investments necessary to incorporate specific design options, including, but not limited to, costs related to new or modified tooling (if any), materials, engineering and development efforts to implement each design option, and manufacturing/production impacts.

Issue D.9 DOE requests comment on whether certain design options may not be applicable to (or incompatible with) certain equipment classes.

Issue D.10 DOE seeks input on any relevant cost adders necessary based on ballast and fixture type (*e.g.*, electronic or magnetic ballast, indoor or outdoor fixture). Specifically, DOE is interested in whether and how the incremental costs for electronically ballasted fixtures in the 2014 MHLF ECS final rule have changed since the time of that analysis.

To account for manufacturers' non-production costs and profit margin, DOE applies a non-production cost multiplier (the manufacturer markup) to the MPC. The resulting manufacturer selling price ("MSP") is the price at which the manufacturer distributes a unit into

commerce. The 2014 MHLF ECS final rule used separate markups for ballast manufacturers (1.47) and fixture manufacturers (1.58). DOE also assumed that fixture manufacturers apply the 1.58 markup to the ballasts used in their fixtures rather than to only the empty fixtures. In aggregate, the markup also accounted for the different markets served by fixture manufacturers. The 1.47 markup for ballast manufacturers applied only to ballasts sold to fixture original equipment manufacturers ("OEMs") directly impacted by this rulemaking. For the purpose of the life cycle cost ("LCC") and national impact analysis ("NIA"), DOE assumed a higher markup of 1.60 for ballasts that are sold to distributors for the replacement market. See chapter 5 of the 2014 MHLF ECS final rule TSD for more information regarding manufacturer markups.

Issue D.11 DOE requests feedback on whether its assumptions regarding manufacturer markups and the values of the markups (1.47 and 1.58) are appropriate for ballast manufacturers and fixture manufacturers, respectively – with the 1.58 markup applying to fixtures with and without ballasts). If they are appropriate, why – and if not, why not? If they are not appropriate, what should they be and why? DOE also requests the same feedback on the higher markup of 1.60 assumed for ballasts sold to distributors for the replacement market.

E. Markups Analysis

By applying markups to the MSPs estimated in the engineering analysis, DOE estimates the amounts customers would pay for baseline and more-efficient equipment. At each step in the distribution channel, companies mark up the price of the equipment to cover business costs and profit margin. Identification of the appropriate markups and the determination of customer equipment price depend on the type of distribution channels through which the equipment move from manufacturer to customer. Table II.5 provides the portion of equipment passing through

different distribution channels, and Table II.6 provides the associated markups used in the 2014 MHLF ECS final rule.

Table II.5 Metal Halide Lamp Fixture Distribution Channels

Channel	Markups	Outdoor Fixtures	Indoor Fixtures
A	Wholesaler + Contractor + Sales Tax	60%	100%
B	Contractor + Sales Tax	20%	0%
C	Sales Tax	20%	0%

Table II.6 Summary of Fixture Distribution Channel Markups

	Wholesaler Distribution		Utility Distribution			
			Via Wholesaler & Contractor		Direct to End User	
	Baseline	**Incremental**	**Baseline**	**Incremental**	**Baseline**	**Incremental**
Electrical Wholesaler (Distributor)	1.23	1.05	N/A	N/A	N/A	N/A
Utility	N/A	N/A	1.00	1.00	1.00	1.00
Contractor or Installer	1.13	1.13	1.13	1.13	N/A	N/A
Sales Tax	1.07		1.07		1.07	
Overall	1.49	1.27	1.21	1.21	1.07	1.07

Issue E.1 DOE requests data on the markups per distribution channel as well as the portion of equipment sold that pass through each distribution channel.

F. Energy Use Analysis

As part of the rulemaking process, DOE conducts an energy use analysis to identify how equipment is used by customers, and thereby determine the energy savings potential of energy

efficiency improvements. To develop annual energy use estimates, DOE multiplies annual usage (in hours per year) by the lamp-and-ballast system input power (in watts). DOE characterizes representative lamp-and-ballast systems in the engineering analysis, which provide measured input power ratings.

In the 2014 MHLF ECS final rule, to characterize the country's average use of fixtures for a typical year, DOE developed annual operating hour distributions by sector, using data published in the 2010 U.S. Lighting Market Characterization ("LMC"), the Commercial Building Energy Consumption Survey ("CBECS"), and the Manufacturer Energy Consumption Survey ("MECS"). 79 FR 7784 (February 10, 2014). In addition, DOE assumed that MHLFs operate at full output (no dimming). Table II.7 provides the operating hours from the 2014 MHLF ECS final rule.

Table II.7 Average Annual Metal Halide Lamp Fixture Operating Hours by Sector

Sector	**Average Annual Operating Hours** ***h/yr***
Commercial	3,615
Industrial	6,113
Outdoor Stationary	4,399
Sports Lighting (>1000W)	350

Issue F.1: DOE seeks data indicating whether its assumptions that MHLFs operate at full output and do not dim are reasonably accurate for estimating MHLF average annual operating hours.

Issue F.2: DOE seeks feedback on the average annual operating hours for MHLFs by sector, and whether the values in Table II.7 continue to be adequate for future potential analyses.

G. Life-Cycle Cost and Payback Analysis

DOE conducts the LCC and PBP analysis to evaluate the economic effects of potential energy conservation standards for MHLFs on individual customers. For any given efficiency level, DOE measures the PBP and the change in LCC relative to an estimated baseline level. The LCC is the total customer expense over the life of the equipment, consisting of purchase, installation, and operating costs (expenses for energy use, maintenance, and repair). Inputs to the calculation of total installed cost include the cost of the equipment—which includes MSPs, distribution channel markups, and sales taxes—and installation costs. Inputs to the calculation of operating expenses include annual energy consumption, energy prices and price projections, repair and maintenance costs, equipment lifetimes, discount rates, and the year that compliance with new and amended standards is required.

In the 2014 MHLF ECS final rule, DOE defined equipment lifetime as the age (in hours in operation) when a fixture, ballast, or lamp is retired from service. 79 FR 7787 (February 10, 2014). Table II.8 to Table II.10 provide the operating life estimates for fixtures, ballasts, and lamps from the 2014 MHLF ECS final rule.

Table II.8 Fixture Operating Life

Indoor	Outdoor
20 years	25 years

Table II.9 Ballast Operating Life

Magnetic	Electronic
50,000 hours	40,000 hours

Table II.10 Lamp Operating Life

Lamp Wattage	Rated life Hours
70W	12,841
150W	13,882
250W	16,785
400W	20,720
1,000W	11,714
1,500W	3,375

Issue G.1 DOE seeks feedback on whether the metal halide fixture, ballast, and lamp operating lifetime values in Table II.8, Table II.9, and Table II.10 are valid for use in additional analyses and if not, why not? If DOE's operating lifetime values are inadequate, what values should it use instead and why? Please provide relevant data in support of whatever alternative values that DOE should use in lieu of its values listed in these tables.

In the 2014 MHLF ECS final rule, DOE used a combination of *RS-Means*[7] and *Sweets*[8] labor rates to estimate the time to install a MHLF, ballast, or a lamp. Labor rates are the sum of the wage rate, employer-paid fringe benefits (*i.e.*, vacation pay, employer-paid health, and welfare costs), and any appropriate training and industry advancement funds costs. 79 FR 7785 (February 10, 2014). Table II.11 to Table II.13 provide the labor costs from the 2014 MHLF ECS final rule, expressed in *2012$*, as well as the labor costs updated to 2018$.[9]

Table II.11 Metal Halide Lamp Fixture Installation/Replacement Labor Costs

Equipment Class	Indoor Installation Cost		Outdoor Installation Cost	
	2012$	***2018$***	***2012$***	***2018$***
70W	$221.32	$247.03	$395.12	$441.02
150W	$230.42	$257.19	$371.94	$415.15
250W	$241.80	$269.89	$499.63	$557.67
400W	$281.32	$314.00	$542.80	$605.86
1,000W	$327.15	$365.15	$625.70	$698.39
1,500W	$384.04	$428.65	$637.40	$711.45

Table II.12 Metal Halide Ballast Replacement Labor Costs

Equipment Class	Indoor Installation Cost		Outdoor Installation Cost	
	2012$	***2018$***	***2012$***	***2018$***
70W	$138.58	$154.68	$278.43	$310.77
150W	$139.65	$155.87	$279.33	$311.78
250W	$140.99	$157.37	$280.45	$313.03
400W	$143.00	$159.61	$282.14	$314.92
1,000W	$151.03	$168.57	$288.89	$322.45

[7] R.S. Means Company, Inc. *2010 RS Means Electrical Cost Data*. 2010.
[8] Sweets-McGraw Hill Construction. *Sweets Electrical Cost Guide 2013*. 2012.
[9] Labor costs were updated to 2018$ using a ratio of the median hourly wage for "49-0000 Installation, Maintenance, and Repair Occupations" in May 2018 compared to May 2012. See *https://www.bls.gov/oes/tables.htm*.

Equipment Class	Indoor Installation Cost		Outdoor Installation Cost	
	2012$	***2018$***	***2012$***	***2018$***
1,500W	$157.72	$176.04	$294.51	$328.72

Table II.13 Metal Halide Lamp Replacement Labor Costs

Equipment Class	Indoor Installation Cost		Outdoor Installation Cost	
	2012$	***2018$***	***2012$***	***2018$***
70W	$90.96	$101.53	$238.41	$266.11
150W	$91.49	$102.12	$238.86	$266.61
250W	$92.16	$102.87	$239.42	$267.23
400W	$93.17	$103.99	$240.27	$268.18
1,000W	$97.18	$108.47	$243.64	$271.94
1,500W	$100.53	$112.21	$246.45	$275.08

Issue G.2 DOE seeks feedback on the costs associated with installing a MHLF, replacing a metal halide lamp ballast, and replacing a metal halide lamp by equipment class as well as location (indoor versus outdoor).

H. Shipments

DOE develops shipments forecasts of MHLFs to calculate the national impacts of potential amended energy conservation standards on energy consumption, net present value ("NPV"), and future manufacturer cash flows. Using a three-step process, the 2014 MHLF ECS final rule described DOE's development of the shipments portion of the NIA spreadsheet, a model that uses historical data as a basis for projecting future fixture shipments. First, DOE used U.S. Census Bureau fixture shipment data, National Electrical Manufacturers Association ("NEMA") lamp shipment data, and NEMA ballast sales trends to estimate historical shipments of each fixture type analyzed. Second, DOE estimated an installed stock for each fixture in 2017

based on the average service lifetime of each fixture type. Third, DOE developed annual shipment projections for 2017–2046 by modeling fixture purchasing events, such as replacement and new construction, and applying growth rate, replacement rate, and alternative technologies penetration rate assumptions. 79 FR 7788 (February 10, 2014).

In the 2014 MHLF ECS final rule, DOE modeled two declining shipment scenarios (known as "low" and "high" scenarios) that started declining at different rates post-2015. DOE stated in the 2014 MHLF ECS final rule that DOE believed that shipments for MHLFs peaked somewhere between 2010 and 2015, as fixtures with other lighting technologies began to significantly displace the use of MHLFs. 79 FR 7789 (February 10, 2014). Table II.14 provides the shipment projections from the 2014 MHLF ECS final rule for the years 2017 and 2018.

Table II.14 Projected Shipments from 2014 MHLF ECS Final Rule

Equipment Class	2017		2018	
	Low	***High***	***Low***	***High***
70W	630,977	645,961	603,506	629,500
150W	266,897	273,235	255,277	266,273
250W	572,608	581,854	550,906	567,026
400W	716,351	727,317	689,759	708,783
1,000W	218,347	222,806	208,841	217,836
1,500W	11,492	11,765	10,992	11,465

Issue H.1 DOE seeks shipment data on MHLF and metal halide lamp ballasts shipped over the last 5-year period, separated by wattage. DOE also seeks feedback on how the projected shipments in Table II.14 compare to actual shipments of MHLFs in these years.

NEMA periodically releases lamp indices. Although the indices do not contain ballast data, data related to lamp shipments are directly related to ballast shipments. Virtually all metal halide ballasts operate only one lamp; thus, changes in metal halide lamp shipments are indicative of trends related to metal halide ballast and fixture shipments. In a recent HID lamp index report, NEMA stated that shipments for metal halide lamps in the fourth quarter of 2017 decreased by 17.6 percent compared to the same period the previous year.[10] NEMA's data point to a continuing decline in metal halide lamp shipments – with 2016 shipments being roughly less than 60 percent of those in 2011.

Issue H.2 DOE seeks data on MHLF shipments, metal halide lamp ballast shipments, as well as any information relevant to the relationship between metal halide lamp shipments and ballast or fixture shipments.

I. National Impact Analysis

The purpose of the NIA is to estimate the aggregate economic impacts of potential efficiency standards at the national level. The NIA assesses the NES and the national NPV of total customer costs and savings that would be expected to result from new or amended standards at specific efficiency levels.

In the 2014 MHLF ECS final rule, DOE evaluated the impacts of new and amended standards for MHLFs by comparing "no new standards"-case projections with standards-case

[10] HID Lamp Indexes Decline in Fourth Quarter 2017 Compared to Fourth Quarter 2016. See *https://www.nema.org/Intelligence/Indices/Pages/HID-Lamp-Indexes-Decline-in-Fourth-Quarter-2017-Compared-to-Fourth-Quarter-2016.aspx*

projections. The no new standards-case projections characterize energy use and customer costs for each equipment class in the absence of new or amended energy conservation standards. DOE compared these projections with projections characterizing the market for each equipment class if DOE adopted new or amended standards at specific energy efficiency levels (*i.e.*, the trial standard levels ("TSLs") or standards cases) for that class. In characterizing the no new standards and standards cases, DOE considered historical shipments, the mix of efficiencies sold in the absence of amended standards, and how that mix may change over time. 79 FR 7788 (February 10, 2014). In the 2014 MHLF ECS final rule, DOE assumed no rebound effect for lighting. *Id*. The rebound effect refers to the tendency of a customer to respond to the cost savings associated with more efficient equipment in a manner that leads to marginally greater equipment usage, thereby diminishing some portion of anticipated benefits related to improved efficiency.

Issue I.1 DOE seeks comment and information on whether a rebound rate of 0 percent is appropriate for MHLFs.

As stated earlier, DOE understands that the MHLF market is declining. For example, fluorescent and light-emitting diode ("LED") light fixtures are displacing MHLFs in many applications. DOE understands that, as a result of an amended energy conservation standard, customers might opt to purchase LED light fixtures in place of MHLFs in greater numbers.

Issue I.2 DOE seeks information related to the potential variables that could cause customers to opt to purchase other technologies (such as LED or fluorescent light fixtures) instead of MHLFs. DOE specifically seeks input on the magnitude of the change in efficiency,

first cost, payback, or other variables that could cause customers to opt for an alternate technology if energy conservation standards for MHLFs were amended.

J. Manufacturer Impact Analysis

The purpose of the manufacturer impact analysis ("MIA") is to estimate the financial impact of amended energy conservation standards on manufacturers of MHLFs, and to evaluate the potential impact of such standards on direct employment and manufacturing capacity. The MIA includes both quantitative and qualitative aspects. The quantitative part of the MIA primarily relies on the Government Regulatory Impact Model, an industry cash-flow model adapted for the equipment in this rulemaking, with the key output of industry net present value. The qualitative part of the MIA addresses the potential impacts of energy conservation standards on manufacturing capacity and industry competition, as well as factors such as equipment characteristics, impacts on particular subgroups of firms, and important market and equipment trends.

As part of the MIA, DOE intends to analyze impacts of amended energy conservation standards on subgroups of manufacturers of covered equipment, including small business manufacturers. DOE uses the Small Business Administration's ("SBA's") small business size standards to determine whether manufacturers qualify as small businesses, which are listed by the applicable North American Industry Classification System ("NAICS") code.[11]

[11] Available online at: *http://www.sba.gov/sites/default/files/Size_Standards_Table.pdf*.

Manufacturing of MHLFs is classified under NAICS 335122, "Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing," and the SBA sets a threshold of 500 employees or less for a domestic entity to be considered as a small business. Manufacturing of metal halide ballasts is classified under NAICS 335311, "Power, Distribution and Specialty Transformer Manufacturing," and the SBA sets a threshold of 750 employees or less for a domestic entity to be considered as a small business. The employee threshold includes all employees in a business' parent company and any other subsidiaries.

One aspect of assessing manufacturer burden involves looking at the cumulative impact of multiple DOE standards and the product-specific regulatory actions of other Federal agencies that affect the manufacturers of a covered product or equipment. While any one regulation may not impose a significant burden on manufacturers, the combined effects of several existing or impending regulations may have serious consequences for some manufacturers, groups of manufacturers, or an entire industry. Assessing the impact of a single regulation may overlook this cumulative regulatory burden. In addition to energy conservation standards, other regulations can significantly affect manufacturers' financial operations. Multiple regulations affecting the same manufacturer can strain profits and lead companies to abandon product lines or markets with lower expected future returns than competing products. For these reasons, DOE conducts an analysis of cumulative regulatory burden as part of its rulemakings pertaining to appliance efficiency.

Issue J.1 To the extent feasible, DOE seeks the names and contact information of any domestic or foreign-based manufacturers that distribute MHLFs and metal halide ballasts in the United States.

Issue J.2 DOE identified small businesses as a subgroup of manufacturers that could be disproportionally impacted by amended energy conservation standards. DOE requests the names and contact information of small business manufacturers, as defined by the SBA's size thresholds, of MHLFs and metal halide ballasts that distribute equipment in the United States. In addition, DOE requests comment on any other manufacturer subgroups that could be disproportionally impacted by amended energy conservation standards. DOE requests feedback on any potential approaches that could be considered to address impacts on manufacturers, including small businesses.

Issue J.3 DOE requests information regarding the cumulative regulatory burden impacts on manufacturers of MHLFs and metal halide ballasts associated with (1) other DOE standards applying to different equipment that these manufacturers may also make and (2) product-specific regulatory actions of other Federal agencies. DOE also requests comment on its methodology for computing cumulative regulatory burden and whether there are any flexibilities it can consider that would reduce this burden while remaining consistent with the requirements of EPCA.

K. Other Energy Conservation Standards Topics

1. Market Failures

In the field of economics, a market failure is a situation in which the market outcome does not maximize societal welfare. Such an outcome would result in unrealized potential welfare. DOE welcomes comment on any aspect of market failures, especially those in the context of amended energy conservation standards for MHLFs.

2. Market-based Approaches to Energy Conservation Standards

As part of its regulatory reform efforts, DOE published a request for information discussing key issues and requesting feedback on market-based approaches to energy conservation standards. 82 FR 56181 (November 28, 2017). DOE requests comment on how market-based approaches to energy conservation standards might impact standards for these products, and specifically seeks comment on any considerations with respect to MHLFs.

In addition to the issues identified earlier in this document, DOE welcomes comment on any other aspect of energy conservation standards for MHLFs not already addressed by the specific areas identified in this document.

III. Submission of Comments

DOE invites all interested parties to submit in writing by [**INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER***], comments and information on matters addressed in this notice and on other matters relevant to DOE's consideration of amended energy conservations standards for MHLFs. After the close of the comment period, DOE will review the public comments received and may begin collecting data and conducting the analyses discussed in this RFI.

Submitting comments via *http://www.regulations.gov*. The *http://www.regulations.gov* web page requires you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies Office staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of

technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to *http://www.regulations.gov* information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information ("CBI")). Comments submitted through *http://www.regulations.gov* cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through *http://www.regulations.gov* before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that *http://www.regulations.gov* provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery, or mail. Comments and documents submitted via email, hand delivery, or mail also will be posted to *http://www.regulations.gov*. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via mail or hand delivery, please provide all items on a CD, if feasible. It is not necessary to submit printed copies. No telefacsimiles (faxes) will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery two well-marked copies: one copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked "non-confidential" with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

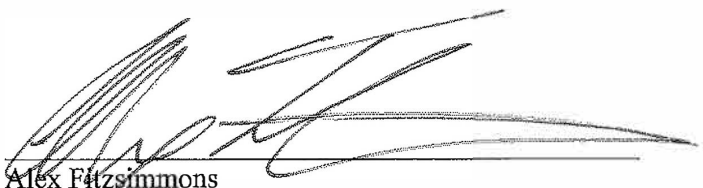
Factors of interest to DOE when evaluating requests to treat submitted information as confidential include (1) a description of the items, (2) whether and why such items are customarily treated as confidential within the industry, (3) whether the information is generally known by or available from other sources, (4) whether the information has previously been made available to others without obligation concerning its confidentiality, (5) an explanation of the competitive injury to the submitting person which would result from public disclosure, (6) when such information might lose its confidential character due to the passage of time, and (7) why disclosure of the information would be contrary to the public interest.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

DOE considers public participation to be a very important part of the process for developing energy conservation standards. DOE actively encourages the participation and

interaction of the public during the comment period in each stage of the rulemaking process. Interactions with and between members of the public provide a balanced discussion of the issues and assist DOE in the rulemaking process. Anyone who wishes to be added to the DOE mailing list to receive future notices and information about this rulemaking or would like to request a public meeting should contact Appliance and Equipment Standards Program staff at (202) 287-1445 or via e-mail at *ApplianceStandardsQuestions@ee.doe.gov*.

Signed in Washington, DC, on June 19, 2019.



Alex Fitzsimmons
Acting Deputy Assistant Secretary for Energy Efficiency
Energy Efficiency and Renewable Energy